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LITERATURE SURVEY, BIOLOGY IN THE TONGUE OF THE OCEAN AND EXUMA SOUND

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PREFACE

The purpose of this paper was to attempt to digest all the available information in the literature on the marine biology of the Tongue of the Ocean and Exuma Sound, and to summarize present knowledge of the oceanography and hydrography of these areas. This paper also points out holidays in the biological information available in these areas. This paper should prove helpful in assessing the role of marine biology in the overall oceanographic environment.

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LITERATURE SURVEY - BIOLOGY IN THE TONGUE
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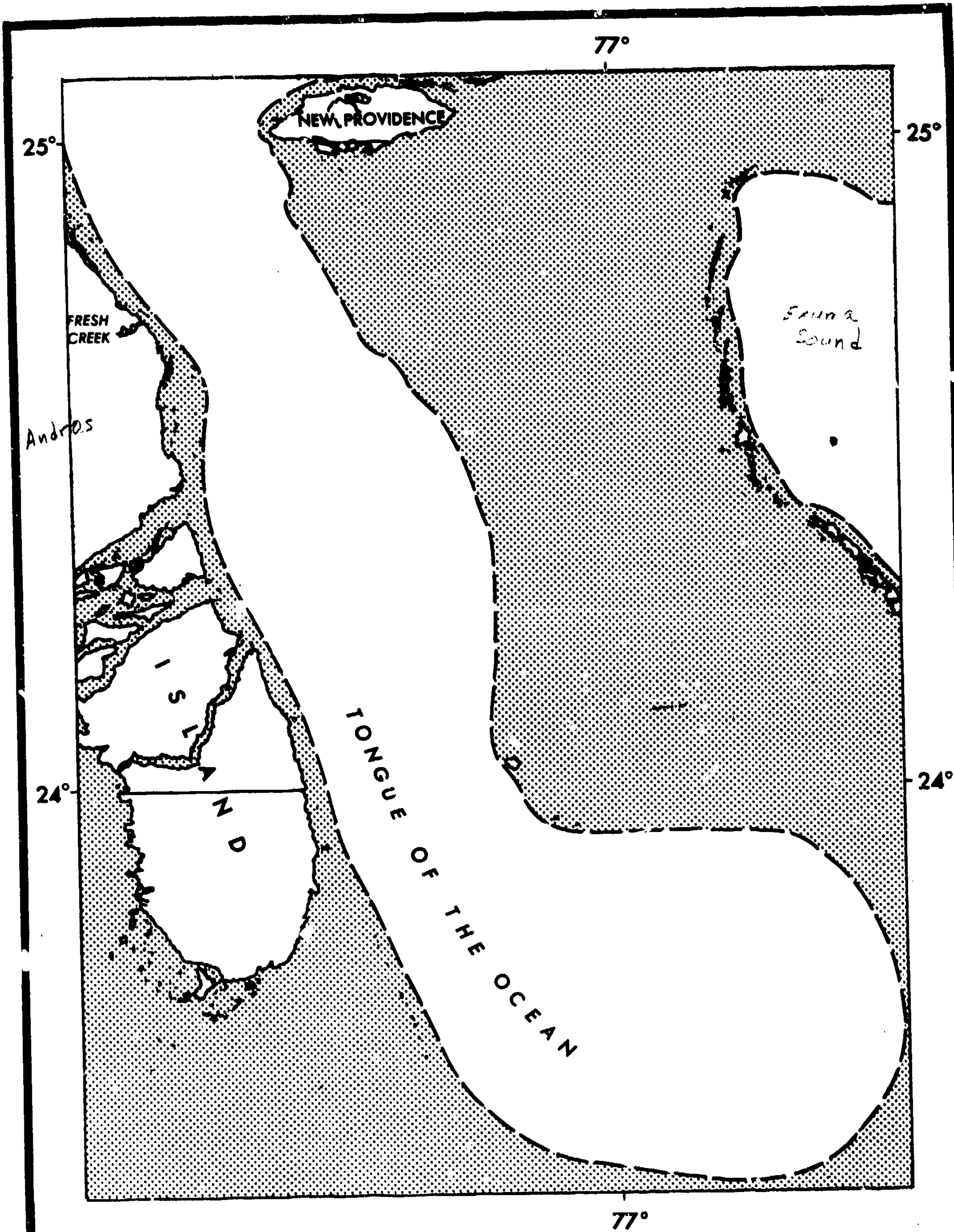
INTRODUCTION

Recently there has been increased emphasis in the study of the oceanography of the Tongue of the Ocean (TOTO) and Exuma Sound areas of the Bahamas. Emphasis has been placed primarily on the study of the physical and geological oceanography in these areas; however, some interest has also been shown in biological oceanography. Unfortunately, the marine life of the TOTO and Exuma Sound has not been well studied. The bulk of biological information currently available for the Bahamas is primarily the result of studies conducted in the Bimini's. Since environmental similarities exist from region to region in the Bahamas it can be inferred that biological similarities may also exist. The following study was conducted to assist in the present and future evaluation of the biological contribution to the overall oceanic environment of the TOTO and Exuma Sound.

AREA DESCRIPTION

General

The TOTO and Exuma Sound are two deep channels on the Great Bahama Bank (Fig. 1). The TOTO is a long channel with a narrow northerly section and a nearly circular cul-de-sac southern extremity. The TOTO is about 105 miles long with a minimum width of about 20 miles in the northern section and a maximum width of about 40 miles in the southern cul-de-sac. Exuma Sound is a broad channel with its northern boundary terminating


77°
NEW PROVIDENCE
25°
25°
FRESH CREEK
Exuma Sound
Andros
ISLAND
TONGUE OF THE OCEAN
24°
24°
77°

in a shallow flat bank of about 6 fathoms depth. Exuma Sound is about 108 miles long with an average width of about 33 miles. The channel of the TOTO extends NNW with the northern mouth open to the deep sea. The full length of the TOTO and Exuma Sound are separated by a shallow flat bank of 4 to 6 fathoms depth which is about 40 miles wide at its widest point and 20 miles wide at its narrowest point.

Bathymetry

The bathymetry of the TOTO has been studied by Armstrong (1953) and Miami University (1958). In general the walls of the TOTO and Exuma Sound are quite steep. According to Heezen et al (1959) slope gradients are in the order of 1:4 to 1:8. Busby (1962) has speculated as to the geological origin of the TOTO in reference to the present bathymetry in the area.

Geology

A limited study of the geology of the TOTO has made, but little is known about Exuma Sound. Sediment studies in the TOTO have been conducted by Armstrong (1953), Miami University (1958), USNHO (1961), and Busby (personal communication). In general, the sediments examined range in size from silty sand to silty clay. The highest sediment frequency is in the clay silt range. Limited chemical analyses (Busby, 1962) indicate that the dominant sediment is calcium carbonate, with analyzed samples from the TOTO ranging from 89 to 98 percent $CaCO_3$.

Oceanography

Oceanographic data from the TOTO have been reported by Armstrong (1953), Miami University (1958), Magnitzky and French (1960), and Ridley (1962). Results of other investigations in the Bahamas have been reported by Smith (1940) at Andros Island and Berry Island and by Turekian (1957) at Bimini.

Temperature in the upper 100 meters of the TOTO varies between 25°C in the winter to above 30°C in the summer. The temperature is about 22°C at 200 meters, about 15°C at 500 meters, and about 5°C at 1,000 meters. A sharp thermocline is found at a depth of about 50 meters. Wind mixing during the winter results in a deep mixed layer which can extend to about 130 meters.

Salinities in the TOTO range from 34.9 to 37.2‰ (parts per thousand) with the salinity maximum at about 100 meters. Surface salinities in the TOTO were found by Miami University (1958) to increase from 0.2 to 0.3‰ proceeding from north to south. Seasonally, marked changes in the salinity in the upper 125 to 150 meters occurs because of the effects of deep wind mixing in the winter and high evaporation rates in the summer. Salinities are approximately 36.5‰ at 250 meters, 36.0‰ at 500 meters, and 35.0‰ between 1,000 meters and the bottom. Isolated cells of high salinity water from the surface to 200 meters have been observed by Miami University (1958). These cells may be the result of the intrusion of highly saline water from the shallow bank areas. These waters are rapidly cooled and consequently high in density. Smith (1940) observed that extremely high saline

waters were formed on the shallow western shore of Andros Island because of the excess of evaporation as compared to precipitation in this geographical region. Extensive seasonal shallow water oceanographic measurements which could corroborate this hypothesis are not available from the TOTO and Exuma Sound.

Oxygen data from the TOTO have been reported by Smith (1958). In the winter, oxygen values ranged from 3.06 to 4.48 ml/l, while in the summer oxygen values ranged from 3.31 to 5.20 ml/l. Oxygen values reach their minimum at about 500 to 600 meters and reach their maximum at about 2 000 meters. In the summer there is a slight increase in oxygen from the surface to 50 meters. This increase is probably due to the increased biological activity by phytoplankton. Below 50 meters the oxygen values decrease to the depths of the oxygen minimum. Although no conclusive evidence has been published, it is quite probable that since there is an intrusion of water from the banks, lenses of high oxygen content water and lenses of low oxygen content water should exist in both the TOTO and Exuma Sound.

Phosphate data in the TOTO have been published by Miami University (1958). The PO_4-P values ranged from 0.01 to 1.43 ug at/l in the winter and 0.04 to 1.61 ug at/l in the summer. The PO_4-P minimum was found at a depth of about 50 meters and the maximum at a depth of 800 meters. In the winter, owing to wind mixing, the PO_4-P content is greater from the surface to the wind-mixed layer. In the summer PO_4-P content is less from the surface to the wind-mixed layer. In the summer PO_4-P levels decrease markedly in the region of greatest biological activity.

Some current measurements have been conducted in the TOTO. The results of these studies are reported by Armstrong (1953), Miami University (1958), Magnitzky and French (1960), and USNHO (1961). Currents in the TOTO and Exuma Sound are generated by winds, tides, and by variations in density distribution. On the basis of analysis of density distribution, relative to the 300-meter level, Magnitzky and French (1960) found that geostrophic currents flowed southward in the eastern part of the TOTO and then gradually curved westward and turned northward in the western part of the TOTO. In all probability, these currents are not too significant since maximum velocities observed below 1,000 meters are about 0.2 knot.

A study of the winds in the TOTO and Exuma Sound prepared by DeLeonibus (1961) shows a high percentage of the winds in a northeasterly to easterly direction. Current measurements between the surface and 200 meters indicated the presence of currents ranging from 0.2 to 1.0 knot with an average velocity of 0.5 knot. Recent rogue measurements by USNHO (1961) showed that current direction and velocity did not coincide with tidal changes. In all probability, wind-induced currents are of primary importance in both the TOTO and Exuma Sound.

Accurate tide data from the TOTO and Exuma Sound are lacking. Present approximations, from USCGS (1961), are that astronomic tides in these areas are semidiurnal with a mean tide level of 2.0 feet (MHWL is 3.3 feet and MLWL is 0.7 feet). Tidal generated currents have been estimated by Smith (1958) to be of the order of 0.2 to 0.5 knot.

Meteorological tide and storm surge data are lacking from the TOTO and Exuma Sound. Studies by Redfield and Miller (1955) have shown that meteorological tides and storm surges, which occur in conjunction with hurricanes and tropical storms, can increase water height 9 feet greater than astronomic tides. In view of the incidence of hurricanes and tropical storms in the vicinity of the TOTO and Exuma Sound, the currents generated by meteorological tides and storm surges are probably quite important.

Submarine daylight measurements, conducted in three regions of the TOTO, have been reported by Miami University (1958). These measurements were made in August 1958 using a submarine photometer with a photoelectric cell (selenium rectifier). From these measurements, it was found that the transparency of the waters in the TOTO is extremely high. Incident light was reduced to 50 percent in the upper 5 to 10 meters and was reduced to 1 percent at depths of 80 to 90 meters Miami University was able to conclude that the transparency in the TOTO is similar to that of the Sargasso Sea, which means that the waters in the TOTO are among the clearest of oceanic waters.

Description of Life

Limited biological data in the TOTO have been published by Armstrong (1953) and Miami University (1958). The USNHO has conducted some biological sampling during the period of August through October 1961. This sampling was limited to short-period (15 to 20 minute) surface horizontal hauls with a #10-mesh half meter net. The results of analysis of these samples, with

respect to the different species collected, are shown in Appendix 1. (Analyses were conducted by James Bruce, Marine Surveys Division, USNHO, Washington 25, D. C.) Since this sampling was limited geographically and seasonally, Appendix 1 is undoubtedly a very incomplete representation of the marine flora and fauna of the TOTO and Exuma Sound.

Since there has been no complete study of the marine biology of the TOTO and Exuma Sound, it was considered advisable to prepare a detailed list, Appendix 2, of some of the marine plants and animals which might be found in these two areas. This tabulation should assist in the taxonomic analysis of future biological samples collected in the TOTO and Exuma Sound. The method employed in preparing Appendix 2 was to conduct a comprehensive survey of the literature available on the marine biology of the Bahamas. The assumption made was that since there are similarities in the physical environment of the Bahamas from north to south, there is probably a similarity in the species distribution of organisms throughout the Bahamas.

Appendix 2 is by no means a complete listing of all the possible biological organisms which might be found in the TOTO and Exuma Sound. The smaller flora and fauna such as bacteria and nannoplankton have been omitted since future sampling in these areas will probably be limited to one-half meter nets, Clarke-Bumpus sampler hauls (#10- to #20-mesh nets), midwater trawls, and dredging operations. Examination of the reference sources for Appendix 2 will indicate that the majority of the data for this appendix are from studies conducted in the northern region of the Bahamas.

PLANT LIFE

Algae

Numerous species of marine algae have been collected in the Bahamas. Howe (1904) provided some of the first information on the algae in this oceanic area. In addition marine algal studies have been carried out in the vicinity of the Bahamas by Almodovar and Blomquist (1959), Diaz-Pfferrer and Lopez (1959), and Voss and Voss (1960). No studies pertaining strictly to the marine algae of the TOTO and Exuma Sound have been reported. In view of the physical environmental data and the availability of nutrients from the shallow water areas, marine algae should be abundant throughout the year.

Hanlon (1957-1961) has discussed the presence of the narrow-leaf Sargasso weed (Sargassum natans) and the broad-leaf Sargasso weed (Sargassum vulgare) in the Bahamas. These brown algae can occur in mats from 1 to 1,000 square feet. Woodcock (1950) has published information on biotic communities associated with submerged rafts of Sargasso weed.

Numerous studies have been conducted on the occurrence of the "red tide" phenomenon associated with blooms of the marine alga Gymnodinium brevis. This alga is found in the Bahamas and "red tides" could occur in the TOTO and Exuma Sound. Other marine algae could have considerable importance with respect to military operations in the Bahamas.

Sea Grasses

The presence of sea grasses in the Bahamas has been discussed by Voss and Voss (1960). These grasses are present near shore and provide a habitat for numerous marine invertebrates. Marine grasses present in a widespread area of the Bahamas are Thalassia testudinum and Cymodocea manatorum.

Sponges

The sponges in the Bahamas have been studied by de Laubenfels (1949), Pearse (1950), and Voss and Voss (1960). These organisms should be present in the inshore areas of the TOTC and Exuma Sound in large numbers. The sponges provide niches for numerous marine invertebrates, and certain sponges such as the Tedania ignis (Fire Sponge) can be dangerous to man.

Coelenterates

The most conspicuous of all the coelenterates found in the Bahamas are the corals. The corals in this area have been studied by Vaughn (1915, 1919a, and 1919b), Newell et al (1959), and Squires (1958). Extensive growths of corals are found off the east coast of Andros Island and in the vicinity of the bank separating the TOTO and Exuma Sound. Coral in these areas is of considerable importance with respect to the presence of other plants and animals. Corals are carnivorous and require a rich food supply. Further, voluminous coral growth is an indication of well oxygenated, freely flowing water in the vicinity of the living part of the reef.

In addition to the corals, a number of hydrozoan and scyphozoan coelenterates are found in these waters. These organisms have been discussed by Newell el at (1959), Voss and Voss (1960), and De Palma

(1961). *Cassiopeia sp.*, the lagoon jellyfish, is found in abundance in sheltered water and should be present in the TOTO and Exuma Sound. Conspicuous among the jellyfish in this area, according to Bolst (1962), is *Physalia physalis*, the Portugese-man-of-war, which can be extremely dangerous to man.

Annelids and Sipunculoids

Numerous marine worms are found in the Bahamas. These organisms have been extensively studied by Pearse (1950), Andrew and Andrew (1953), Renaud (1956), and Voss and Voss (1960). These benthic organisms should be found in abundance in the littoral zones of the TOTO and Exuma Sound.

Echinoderms

The echinoderms are represented by numerous species in the Bahamas. These animals have been studied by Ives (1891), Clarke (1942), Deichmann (1957), Newell *et al* (1959), and Voss and Voss (1960). These organisms are generally littoral and should be abundant in the benthic fauna of the TOTO and Exuma Sound. Included in this group are sea urchins such as *Diodema antillarum*, Black Urchin, which are poisonous to man.

Mollusks

The Bahamas provide the habitat for numerous mollusks. Primary among these are the pelycepods (clams and oysters). The study of the mollusks in the Bahamas has been treated by Pearse (1950), Newell *et al* (1959), Voss (1960), and Voss and

Voss (1960). In all probability boring mollusks are present in the TOTO and Exuma Sound. These boring forms could cause considerable damage to installations constructed below water.

Arthropods

The marine arthropods in the Bahamas have received only superficial study. These studies have been limited primarily to those arthropods found in the littoral zone. Reports of these arthropods have been published by Pearse (1950), Clarke (1955), Chappuis and Deboutteville (1956), Newell *et al* (1959), and Voss and Voss (1960). There has been no detailed study of the marine arthropods in the neritic zone. Examination of Appendix 1 will indicate that in the oceanic surface samples a large variety of arthropods were encountered. Records at the USNHO indicate that there are numerous sonic arthropods (i.e., snapping shrimp) present in these areas. These sonic arthropods, if present in abundance, may result in high ambient noise levels.

Cartilaginous Fishes

Numerous sharks and rays are found in the waters of the Bahamas. It is quite possible that these animals may be found in considerable numbers in the TOTO and Exuma Sound. Reports of rays and sharks in the Bahamas have been published by La Garce (1919), Gudger (1939), and Bigelow and Schroeder (1948). In view of the numerous reports of shark attacks, these animals are a definite hazard to humans.

Bony Fishes

The bony fishes in the Bahamas have been studied by Fish *et al* (1952), Woods (1952), Fish (1954), Mowbray (1956), Moulton (1958), Tavolga (1958), Fish and Mowbray (1959), and Krumholz (1959). There probably are a large number of fishes in the TOTO and Exuma Sound throughout the year, especially in the shallow water regions. A large number of the bony fishes from the Bahamas are sonic.

Reptiles

The most important marine reptiles in the Bahamas are the marine turtles. These animals have been discussed by Ingle and Smith (1949) and Hanlon (1957-1961). Several species of these large reptiles are hunted commercially. Andros Island serves as a nesting ground for *Thallasochelys kempii*, Kemp's turtle.

Mammals

Reports by Kellogg (1929), Bullis and Moore (1956), Caldwell et al (1956), and Moore (1958) indicate that there is the possibility of six different species of whales appearing in the TOTO and Exuma Sound. In all probability these animals would be found as transients. Included in this group is the Finback Whale, *Balaenoptera musculus*, which, according to Harvey (1959), has been known to measure up to 100 feet long.

Ridley (personal communication) has reported the presence of porpoises in the TOTO. The reaction and behavior of these animals to sound has been reported by Kellogg and Kohler (1952).

SOUND PRODUCERS

Marine organisms capable of producing sounds use these sounds for a variety of purposes. Numerous studies have been conducted to show that sound can be used as a means of echo location and orientation [Griffin (1956), McBride (1956), and Kellogg (1953, 1956, and 1959)]. Organisms in the TOTO and Exuma Sound may use their sonic capability for this purpose.

The contribution of marine animal noises to the total ambient noise in deep water in the TOTO and Exuma Sound will probably not be too great. However, in shallow water areas (0 to 30 feet) this noise contribution could be significant. Unfortunately, marine organisms are notoriously curious and underwater devices (i.e., sensitive hydrophones and transducers) could attract sound producers. Further, any underwater device will provide additional surface area for the growth of organisms which might act as the food for sound producers. Consequently, the possible incidence of attraction of these organisms could be increased.

Sound Attenuators

Studies by Hansen and Barnham (1962) have shown that large plankton blooms, such as occur during "red tides," can cause considerable attenuation of sound in surface water layers. Further, large populations of algae may cause the introduction of a considerable amount of oxygen into the water in the proximity of these algae. The total of oxygen introduced can

result in saturation in the upper levels of the water column. Carsola and Kelly (1960) and Ramsey (1962) have found that oxygen saturation can have a serious effect on sound transmission in the region of saturation.

False Targets

Since there are numerous large fishes, sea turtles, and possibly whales in the vicinity of the TOTO and Exuma Sound it is quite probable that these organisms will act as false targets during sonar operations. Further, subsurface rafts of Sargasso weed can also act as false targets. With some practical experience, operators of sonar equipments will probably be able to differentiate between the real targets and "false targets" in these areas.

Arthropods

Studies by Johnson *et al* (1947), off the coast of southern California, led to the conclusion that major contributors of the biological noise encountered were shrimp of the genera *Crangon* and *Synalpheus*. These shallow water shrimp should be found in the TOTO and Exuma Sound (USNHO Snapping Shrimps Cards, 1962). In all probability the area in the vicinity of the shrimp beds should be noisy. The strongest components of shrimp noise are in the frequency range from 2 to 20 kc, and the sound levels over snapping shrimp beds may be 30 db higher than sea state 1 noise. A study by Everest *el al* (1948) lists the spectra of sound emitted by shrimp from numerous areas.

Moulton (1957 and 1958) has studied the sound production of the lobster, Panulirus argus, found in the Bahamas. This organism produces a rasping sound which is a single burst lasting for about 0.1 second. The frequency of the sound is from 0.04 to 9.00 kc with the greatest intensity at 8.00 kc. In addition to the rasping sound this organism can produce rattling noises. These rattling noises are made by lobsters even when not being disturbed.

Fishes

The study of fish noise in the Bahamas has received considerable attention by Fish et al (1952), Fish (1954), Moulton (1958), Tavolga (1958), and Fish and Mowbray (1959). The fishes studied produced sounds in a wide spectrum of frequencies and for varying intervals of time. Fish noise can be significant when fishes are in schools. According to Mowbray (1956) gamefishes in the Bahamas are not found in large schools, but this does not preclude the possibility of seasonal schooling for migration or mating purposes.

Fouling

A deep-sea fouling pretest was conducted in the TOTO by the USNHO from 17 June to 22 August 1961 (De Palma, 1962). Test panels were placed from the surface to about 970 meters. Fouling organisms attached in decreasing amounts to a depth of approximately 170 meters. Severe fouling was noted from the

surface to 12 meters with green algae, diatoms, and foraminifera being the most abundant fouling organisms. Other fouling organisms were various hydroids, parasitic copepods (*Lepeophthyrus* *sp.*), and barnacles (*Balanus sp.*, *Conchoderma virgatum*, and *Lepas anatifera*). De Palma (1962) noted that fouling on piers and pilings at Andros Island and New Providence Island was slight to moderate in the tidal zone. This fouling was dominated by balanoid barnacles.

On the basis of the numbers of encrusting and boring organisms in the shallow waters of the Bahamas it would seem that fouling could become a serious problem. However, fouling in an area is not necessarily limited to shallow water as Murray (1895) has shown in his summary of "Challenger" bottom studies.

A unique biological feature in a highly productive area is the lack of adequate space for the settling of the larvae of benthic organisms. Man-made intrusions into the benthic environment provide additional settling sites. These intrusions, to mention a few, may be pilings, platforms, components of acoustical systems, ships, and mooring cables. This is particularly true if these intrusions occur in a region of sufficient illumination to permit growth of holotrophic organisms. Plant fouling organisms require a sufficient food supply in the surrounding medium to remain alive. In many instances the fouling organisms are able to use the materials which they are attached to as a source of raw materials for food production.

On the basis of the following criteria:

(1) Clear water in near shore areas and

(2) Abundant coral growth, indicating a good supply of water borne foodstuffs,

it is estimated that fouling in the shallow water areas of the TOTO and Exuma Sound will be significant.

DANGEROUS ORGANISMS

Numerous biological organisms (sponges, coelenterates, echinoderms, annelids, and fishes) which are present in the Bahamas could be injurious to man. This is particularly true of personnel whose duties will require them to spend any time in the water (i.e., divers and nearshore construction workers). Contact with poisonous marine organisms could result in death, but it is more likely to result in painful inflammation of the site of contact. Owre (1956) and Lane and Dodge (1958) have studied the effects of stings by coelenterates.

Several of the gamefish in the Bahamas are poisonous so that the possibility of poisoning from eating these fish (icthyosarcotoxism) could exist if gamefish are improperly prepared.

Dinoflagellates responsible for using the "red tide" phenomenon can cause skin irritations and irritations to the respiratory track. Chew (1956) has suggested a method for prediction of the occurrence of "red tides" and Collier (1958) has reported on the biochemical aspects of the "red tide."

Since there are numerous sharks present in the TOTC and Exuma Sound the possibility of shark attack exists. There is also the danger of attack by skates (rays) and moray eels.

CONCLUSIONS

At present it is impossible to completely assess the biological contribution to the overall oceanic environment of the TOTO and Exuma Sound. The information presented as to the possible occurrence of various organisms is purely speculative. However, it would seem that the biology in this area may be extremely important with respect to naval operations conducted in these areas. It is considered that a comprehensive biological study conducted in the TOTO and Exuma Sound is necessary. This study should include both qualitative and quantitative examinations of the pelagic, planktonic, and benthic organisms in the neritic and oceanic provinces and in the littoral and deep-sea zones. Productivity studies should be conducted in the area. Ambient noise measurements should be made, with special emphasis on the biological noise in the region of shrimp beds. Fouling studies should be increased with some emphasis placed on the study of fouling in the neritic province. Dangerous marine plants and animals should be thoroughly studied so that proper assessment of possible danger from these organisms can be made. Behavior of specific organisms (fish schools or clusters of benthic organisms) should be observed in order to determine the location of regions of excessive fouling or abnormal animal activity. When a comprehensive study is completed it may be determined that some areas in the TOTO and Exuma Sound are unfit for specific naval operations because of the biological aspects of these regions.

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APPENDIX 1

Organisms in the Tongue of the Ocean (TOTO)

Organism	Scientific Name
ALGAE	
Blue green algae	
Dinoflagellate	*Ceratium* sp.
Diatom	*Chaetoceros* sp.
Diatom	*Cossinodiscus* sp.
Foraminiferan	*Globigerina* sp.
Radiolarian	*Radiolaria* sp.
Brown algae	*Sargassum* sp.
COELENTERATA	
Scyphozoan medusa	
Cyphonautes larva	
ANNELIDA	
Polychaete larva	
MOLLUSKS	
Gastropod	
Lammellibranch	
Scaphopod	
Pterropod	
CHAETOGNATHS	
Arrow worm	
ECHINODERMS	
Starfish larva	
Echinopluteus larva	

APPENDIX I (Continued)

Organism	Scientific Name
ARTHROPODS	
Copepod	Acartia tonsa
Copepod	Acrocalanus longicornis
Copepod	Calanus sp.
Copepod	Calocalanus pavo
Copepod	Calocalanus pavonina
Copepod	Copilia sp.
Copepod	Corycaeus sp.
Copepod	Corycaeus speciosus
Brachiopod	Evadne sp.
Copepod	Farranula sp.
Copepod	Lubbockia sp.
Copepod	Lucicutia longicornis
Copepod	Macrostella sp.
Decapod	Maia sp.
Copepod	Microstella sp.
Copepod	Oithona sp.
Copepod	Oncaea sp.
Decapod	Porcellanid sp.
Copepod	Sapphirina sp.
Copepod	Temora styliera
Euphausiid	Thysanoessa sp.
Copepod	Undeuchaeta minor
VERTEBRATES	
Salp	Doliolum sp.
Fish eggs	

Possible Organisms in the Tongue of the Ocean (TOTO) and Exuma Sound

Scientific Name	Common Name	Reference Source
	ALGAE	
Acanthophora spicifera	Red algae	Voss and Voss (1960)
Acetabularia sp.	Green algae	Voss and Voss (1960)
Batophora Oerstedi	Green algae	Voss and Voss (1960)
Bostrychia tenella	Red algae	Voss and Voss (1960)
Caulpera paspaloides	Green algae	Newell et al (1959)
Cladophora glauscens	Green hair	Voss and Voss (1960)
Cladophoropsis membranacea	Green algae	Voss and Voss (1960)
Coralina cubensis	Red algae	Voss and Voss (1960)
Dictyosphaerium cavernosa	Brown algae	Newell et al (1959)
Dictyota indica	Brown algae	Voss and Voss (1960)
Entophysalis deusta	Blue-green algae	Newell et al (1959)
Enteromorpha sp.	Green algae	Voss and Voss (1960)
Galaxaura subverticillata	Red algae	Newell et al (1959)
Goniolithon strictum	Red algae	Newell et al (1959)
Halimeda incrassata	Green algae	Voss and Voss (1960)
Halimeda opuntia	Green algae	Voss and Voss (1960)
Halimeda scabra	Green algae	Voss and Voss (1960)
Halimeda tridens	Green algae	Voss and Voss (1960)
Heterosiphonia secunda	Red algae	Voss and Voss (1960)
Jania capillacea	Red algae	Newell et al (1959)
Laurencia intricata	Red algae	Newell et al (1959)
Laurencia portei	Red algae	Voss and Voss (1960)

APPENDIX 2 (continued)

Scientific Name	Common Name	Reference Source
	ALGAE (Continued)	
Lithothamnion sp.	Red algae	Voss and Voss (1960)
Penicillus capitatus	Green algae	Newell et al (1959)
Penicillus dumetosus	Green algae	Newell et al (1959)
Penicillus pyriformis	Green algae	Voss and Voss (1960)
Podina Sanctae-Grucis	Brown algae	Voss and Voss (1960)
Porolithon pachydermum	Red algae	Newell et al (1959)
Rhipocephalus phoenix	Green algae	Newell et al (1959)
Rotalea rossa	Foraminiferan	Newell et al (1959)
Sargassum natans	Narrow-leaf Sargassum weed	Hanlon (1957-1961)
Sargassum polyceratium ovatum	Brown algae	Newell et al (1959)
Sargassum Vulgare	Wide-leaf Sargassum weed	Hanlon (1957-1961)
Turbinaria tubrinata	Brown algae	Newell et al (1959)
Zonaria zonalis	Brown algae	Newell et al (1959)
	SEA GRASSES	
Thalassia testudinum	Turtle grass	Newell et al (1959)
Cymodocea Manatorum	Sea grass	Newell et al (1959)
	PORIFERA	
Agelas sparsus	Sponge	de Laubenfels (1949)
Anthosigmella varians	Dingy Sponge	de Laubenfels (1949)
Aulospongus schoemus	Branching sponge	Pearse (1950)
Axociella spinosa	Thin sponge	de Laubenfels (1949)
Callyspongia fallax	Tube sponge	de Laubenfels (1949)

APPENDIX 2 (continued)

Scientific Name	*Common Name	Reference Source
	PORIFERA (Continued)	
Callyspongia vaginalis	Tube sponge	de Laubenfels (1949)
Chondrilla nucula	Chicken-liver sponge	de Laubenfels (1949)
Cinuchyra cavernosa	Sponge	de Laubenfels (1949)
Cliona vastifica	Boring sponge	Voss and Voss (1960)
Cribrochalina infundibula	Funnel sponge	de Laubenfels (1949)
Cryptotheya cripta	Sponge	de Laubenfels (1949)
Dysidea etheria	Heavenly sponge	de Laubenfels (1949)
Fibulia nolitangere	Bun sponge	Voss and Voss (1960)
Geodia gibberosa	White sponge	de Laubenfels (1949)
Haliclona longleyi	Finger sponge	de Laubenfels (1949)
Haliclona molibita	Sponge	de Laubenfels (1949)
Haliclona rubens	Red sponge	Pearse (1950)
Haliclona viridis	Green sponge	de Laubenfels (1949)
Higginsia coralloides	Coral sponge	de Laubenfels (1949)
Hircinia strobilina	Sponge	Pearse (1950)
Ianthella ianthella	Big sponge	de Laubenfels (1949)
Iotrochata brotulata	Brown sponge	Pearse (1950)
Ircinia fasciculata	Stink sponge	de Laubenfels (1949)
Ircinia strobilina	Loggerhead sponge	de Laubenfels (1949)
Oligoceras hemmorhages	Bleeding sponge	de Laubenfels (1949)
Pseudaxinella rosacea	Rosette sponge	de Laubenfels (1949)
Siphonochalina siphona	Yellow-brown sponge	de Laubenfels (1949)
Spheciospongia vesparia	Manjack sponge	Pearse (1950)
Spirastrella coccinea	Sponge	de Laubenfels (1949)

APPENDIX 2 (continued)

Scientific Name	Common Name	Reference Source
	PORIFERA (Continued)	
Spongia officinalis	Reef sponge	de Laubenfels (1949)
Tedania ignis	Fire sponge	de Laubenfels (1949)
Verongia fistularis	Candle sponge	de Laubenfels (1949)
Xytopsene sigmatum	Lagoon sponge	de Laubenfels (1949)
	COELENTERATA - CORALS	
Acropora cervicormis	Staghorn coral	Newell et al (1959)
Acropora palmata	Outlet coral	Squires (1958)
Agarcia agaricites var. crassa	Purple coral	Squires (1958)
Agarcia agaricites var. purpurea	Purple coral	Squires (1958)
[illegible]ichocoenia stokesii	Small stone coral	Vaughn (1915)
[illegible]iploria clivosa	Mat coral	Squires (1958)
Diploria strigosa	Boulder coral	Squires (1958)
Eusmilia sp.	Coral	Vaughn (1915)
Favia fragum	Caupiliform coral	Squires (1958)
Isophyllastrea rigida	Coral	Vaughn (1915)
Isophyllia sinuosa	Coral	Vaughn (1915)
Manicina areolata	Rose coral	Newell et al (1959)
Millepora alcicornis	Coral	Vaughn (1915)
Millepora complanata	Coral	Vaughn (1915)
Montastrea annularis	Coral	Vaughn (1915)
Monastrea cavernosa	Coral	Vaughn (1915)
Mussa aff. dispacea	Coral	Vaughn (1915)
Oculina diffusa	Branching coral	Vaughn (1915)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	COELENTERATA - CORALS (Continued)	
Palythoa sp.	Coral	Newell et al (1959)
Paracyanthus confertus	Coral	Vaughn (1915)
Porites asteroides	Star coral	Vaughn (1915)
Porites porites var. clavaria	Finger coral	Squires (1958)
Porites porites var. divaricata	Finger coral	Squires (1958)
Porites porites var. furcata	Finger coral	Squires (1958)
Siderastrea radians	Spheroid coral	Squires (1958)
S. siderea	Starlet coral	Squires (1958)
Stephanocoenia intersepta	Coral	Vaughn (1915)
Stephanocoenia michelini	Coral	Vaughn (1915)
	COELENTERATA - OTHER COELENTERATES	
Aiptasia annulata	Sea anenome	Newell et al (1959)
Bartholomea annulata	Sea anenome	Newell et al (1959)
Cassiopeia sp.	Lagoon jellyfish	Voss & Voss (1960)
Cassiopeia xamachina	Lagoon jellyfish	Voss & Voss (1960)
Condylactis gigantica	Sea anenome	Voss & Voss (1960)
Gorgonia fabellum	Gorgonacean	Newell et al (1959)
Phymanthus crucifer	Sea anenome	Newell et al (1959)
Physalia physalis	Portugese-man-of-war	Bolst (personal communication)
Stoichaetis helianthus	Sea anenome	Newell et al (1959)
Zoanthus sociatus	Sea anenome	Newell et al (1959)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	ANNELIDA & SIPUNCULOIDEA	
Amphione jamaicensis	Bristle worm	Voss & Voss (1960)
Arenicola cristata	Lug worm	Andrew & Andrew (1953)
Arenicola marina	W. Indian lug worm	Andrew & Andrew (1953)
Armandia agilis	Ophelid worm	Renaud (1956)
Armandia maculata	Sea worm	Pearse (1950)
Aspidosiphon cumingii	Sipunculoid worm	Andrew & Andrew (1953)
Autolytus sp.	Transparent bristle worm	Andrew & Andrew (1953)
Chloeia viridis	Red bristle worm	Andrew & Andrew (1953)
Cirriformia filigera	Cirratulid worm	Renaud (1956)
Cirriformia tortugaensis	Sea worm	Pearse (1950)
Dasybranchus sp.	Capitellid worm	Andrew & Andrew (1953)
Dasybranchus lumulatus	Sea worm	Pearse (1950)
Eunice denticulata	Eunicid worm	Renaud (1956)
Eunice filamentosa	Sea worm	Pearse (1950)
Eunice longicirrata	Eunicid worm	Renaud (1956)
Eunice rubra	Red sponge worm	Renaud (1956)
Eunice tibania	Eunicid worm	Andrew & Andrew (1953)
Eupolydontes cornishii	Sea worm	Andrew & Andrew (1953)
Eupolymnia crassicornis	Terebellid worm	Andrew & Andrew (1953)
Eurythoe complanata	Bristle worm	Andrew & Andrew (1953)
Glycera americana	Sargassum worm	Andrew & Andrew (1953)
Glycera tesselata	Pink worm	Renaud (1956)
Haplosyllis spongicola	Bristle worm	Renaud (1956)
Hermodice caruncolata	Bristle worm	Andrew & Andrew (1953)
Hysicomis midoculi	Purple feather duster worm	Andrew & Andrew (1953)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	ANNELIDA & SIPUNCULOIDEA (Continued)	
Lepidontotus variabilis	Sea worm	Renaud (1956)
Lumbreneresis latrelli	Sea worm	Pearse (1950)
Lysidice ninetta	Red worm	Andrew & Andrew (1953)
Marphysa sanguinea	Eunicid worm	Andrew & Andrew (1953)
Mystides elongata	Phyllocid worm	Renaud (1956)
Namanereii ovanaryensis	Nereid worm	Andrew & Andrew (1953)
Nicidion kinbergi	Eunicid worm	Renaud (1956)
Notopygos crinita	Small bristle worm	Andrew & Andrew (1953)
Odontosyllis enopla	Bristle worm	Andrew & Andrew (1953)
Perenereis andersoni	Nereid worm	Andrew & Andrew (1953)
Perenereis floridana	Nereid worm	Andrew & Andrew (1953)
Phascolosoma sp.	Sipunculoid worm	Andrew & Andrew (1953)
Physocosoma microdentigerum	Sipunculoid worm	Andrew & Andrew (1953)
Physocosoma varians	Sipunculoid worm	Andrew & Andrew (1953)
Platynereis dumerilii	Sargassum worm	Andrew & Andrew (1953)
Polymnia nebulosa	Terebellid worm	Voss & Voss (1960)
Sabella melanostigma	Feather duster worm	Voss & Voss (1960)
Sabellastarte magnifica	Feather duster worm	Renaud (1956)
Scyphoproctus sp.	Capitellid worm	Andrew & Andrew (1953)
Sthenelais setosa	Sea worm	Pearse (1950)
Stylariodes plumosa	Sea worm	Pearse (1950)
Terebella magnifica	Sea worm	Pearse (1950)
Trypanopsyllis sp.	Sea worm	Pearse (1950)
Vanadis crystallina	Red-eyed worm	Renaud (1956)
	MOLLUSKS	
Acanthopleura granulata	Chiton	Voss & Voss (1960)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	MOLLUSKS (Continued)	
Aequipecten gibbus	Pecten	Newell *et al* (1959)
Anadaca mutabilis	Pelycepod	Newell *et al* (1959)
Asaphis deflorata	- - -	Voss & Voss (1960)
Botillaria minima	- - -	Voss & Voss (1960)
Chiton squamosus	Snake chiton	Pearse (1950)
Chiton viridis	Chiton	Newell *et al* (1959)
Chlamys benedicti	Pelycepod	Newell *et al* (1959)
Clione cancellata	Pelycepod	Newell *et al* (1959)
Codakia oribicularis	- - -	Voss & Voss (1960)
Cumingia coarata	Clam	Pearse (1950)
Cypraea cineria	Clam	Pearse (1950)
Diodora listeri	Limpet	Voss & Voss (1960)
Divaricella quadrisculata	Pelycepod	Newell *et al* (1959)
Echininus nodulosus	Snail	Voss & Voss (1960)
Fasciolaria tulipa	- - -	Voss & Voss (1960)
Fissurella barbadensis	Keyhole limpet	Voss & Voss (1960)
Gastrochaena hiars	Pelycepod	Newell *et al* (1959)
Glycimeris undata	Pelycepod	Newell *et al* (1959)
Gouldia cerina	Pelycepod	Newell *et al* (1959)
Irwitia sp.	Pelycepod	Newell *et al* (1959)
Isognomon alata	Bivalve	Voss & Voss (1960)
Isognomon listeri	Clam	Pearse (1950)
Isognomon radiata	Clam	Newell *et al* (1959)
Laevicardium laevigatum	Pelycepod	Newell *et al* (1959)
Limnoria sp.	Wood borer	Voss & Voss (1960)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	MOLLUSKS (Continued)	
Linia antillensis	Clam	Pearse (1950)
Lithophaga nigra	Pelycepod	Newell *et al* (1959)
Littorina melagris	Gastropod	Voss & Voss (1960)
Littorina mespilium	Brown gastropod	Voss & Voss (1960)
Littorina ziczac	Periwinkle	Voss & Voss (1960)
Livona pica	W. Indian top shell	Voss & Voss (1960)
Lucina pennsylvanica	Pelycepod	Newell *et al* (1959)
Lucopina sawbibii	Limpet	Voss & Voss (1960)
Macrocalista maculata	Pelycepod	Newell *et al* (1959)
Musculus coralliophagus	Pelycepod	Newell *et al* (1959)
Musculus lateralis	Pelycepod	Newell *et al* (1959)
Nerita peleronta	Gastropod	Voss & Voss (1960)
Nerita tessellata	Gastropod	Voss & Voss (1960)
Nerita versicolor	Gastropod	Voss & Voss (1960)
Octopus macropus	Grass octopus	Voss (1960)
Octopus vulgaris	Rock octopus	Voss (1960)
Onychothestis banksi	Squid	Voss (1960)
Papyridea semisculatum	Rugose clam	Pearse (1950)
Pecten antillarum	Pecten	Voss & Voss (1960)
Penctades reliata	Pen shell	Voss & Voss (1960)
Pinctada radiata	Clam	Voss & Voss (1960)
Pitcer simpsoni	- - -	Newell *et al* (1959)
Plicatulata gibbosa	Polycepod	Newell *et al* (1959)
Polinices duplicata	Moon-shell	Voss & Voss (1960)
Polinices lacteus	Snail	Voss & Voss (1960)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	MOLLUSKS (Continued)	
Postularca odonsi	Snail	Pearse (1950)
Siphonaria alternata	Snail	Voss & Voss (1960)
Spiroglyphus irregularis	Snail	Newell et al (1959)
Strigilla miriablis	Pelycepod	Newell et al (1959)
Strombus sambá	Conch	Newell et al (1959)
Strombus gigas	Pink conch	Voss & Voss (1960)
Tectarius muricatus	- - -	Voss & Voss (1960)
Tellina interupta	Pelycepod	Newell et al (1959)
Tellina radiata	Pelycepod	Newell et al (1959)
Teredo sp.	Wood borer	Voss & Voss (1960)
Thais patula	Purple shell	Voss & Voss (1960)
Thais rusticata	Purple shell	Voss & Voss (1960)
Varicorbula operculata	Pelycepod	Newell et al (1959)
Vermicularis spirata	Pelycepod	Voss & Voss (1960)
Verticordia ornata	Pelycepod	Newell et al (1959)
	ECHINODERMATA	
Actinopyga agassizii	Sea cucumber	Deichmann (1957)
Amphipoda repens	Brittle star	Clark (1942)
Amphipholis gracillima	Brittle star	Clark (1942)
Amphipholis squamata	Brittle star	Clark (1942)
Amphiura Steransi	Brittle star	Ives (1891)
Asterina folium	Sea star	Clark (1942)
Asteroporpa annulata	Brittle star	Clark (1942)
Astracea longispina	Sea star	Ives (1891)
Astropecten articulatus	Sea star	Ives (1891)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	ECHINODERMATA (Continued)	
Actropecten duplicatus	Sea star	Ives (1891)
Astrophyton costatum	Brittle star	Ives (1891)
Cidaris tribuloides	Feather stars	Ives (1891)
Clypeaster rosaceus	---	Newell et al (1959)
Diodena antillarum	Black urchin	Voss & Voss (1960)
Echinanthus rosacens	Feather stars	Ives (1891)
Echinaster sentus	Starfish	Newell et al (1959)
Echinaster spinosus	Sea star	Ives (1891)
Echinometra lucunter	Boring sea urchin	Voss & Voss (1960)
Echinometra subangularis	Feather star	Ives (1891)
Euapta lappa	Sea cucumber	Deichmann (1957)
Eucardis tribuloides	Sea urchin	Voss & Voss (1960)
Hysponae esculenta	Feather stars	Ives (1891)
Holothuria cubana	Sea cucumber	Clark (1942)
Holothuria glaberrina	Soft-skin sea cucumber	Deichmann (1957)
Holothuria grisea	Sea cucumber	Deichmann (1957)
Holothuria impatiens	Warted sea cucumber	Deichmann (1957)
Holothuria parvula	Sea cucumber	Deichmann (1957)
Holothuria princeps	Sea cigar	Deichmann (1957)
Linckia Guildingii	Sea star	Ives (1891)
Luidia clathrata	Sea star	Ives (1891)
Lytechinus variegatus	Echinoid	Newell et al (1959)
Mellita sexiesperforata	Echinoid	Newell et al (1959)
Myona ventricosa	---	Newell et al (1959)
Nemaster iowensis	Feather star	Clark (1942)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	ECHINODERMATA (Continued)	
Ophiactis algicola	Brittle star	Clark (1942)
Ophiactis mulleri	Brittle star	Ives (1891)
Ophiactis savignyi	Brittle star	Clark (1942)
Ophiocoma pumila	Brittle star	Pearse (1950)
Ophiocoma riisei	Brittle star	Clark (1942)
Ophiomyxa flaccida	Brittle star	Clark (1942)
Ophiostigma isacanthum	Brittle star	Clark (1942)
Ophiothrix angulata	Brittle star	Clark (1942)
Ophiothrix oerstedii	Brittle star	Ives (1891)
Ophiothrix suensonii	Brittle star	Clark (1942)
Ophiura cincerea	Brittle star	Ives (1891)
Oreaster reticulatus	Sea star	Clark (1942)
Parathyone surinamensis	Button sea cucumber	Deichmann (1957)
Pentaceros reticulatus	Sea star	Ives (1891)
Pentacucumis planci	Sea cucumber	Deichmann (1957)
Stephanasterias gracilis	Sea star	Clark (1942)
Stichopus badinotus	Sea cucumber	Deichmann (1957)
Stylocidaris affinis	Sea urchin	Clark (1942)
Stoloasterias tenuispina	Sea star	Clark (1942)
Synaptus sp.	Sea cucumber	Newell et al (1959)
Toxopneustes variegatus	Feather star	Ives (1891)
Tripneustes esculentus	Sea urchin	Voss & Voss (1960)
	ARTHROPODA	
Arenopontia longiremis	Copepod	Chappuis & Deboutteville (1956)
Arenostella palpilabra	Copepod	Chappuis & Deboutteville (1956)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	ARTHROPODA (Continued)	
Callinectes exasperatus	Brachyuran crab	Voss & Voss (1960)
Chthamalus angustitergum	Barnacle	Newell et al (1959)
Chthamalus stellatus	Barnacle	Voss & Voss (1960)
Clibanarius sp.	Decapod	Pearse (1950)
Crangon cylindricus	Pistol shrimp	Pearse (1950)
Crangon floridonus	Pistol shrimp	Pearse (1950)
Crangon formosus	Pistol shrimp	Pearse (1950)
Crangon normani	Pistol shrimp	Pearse (1950)
Crangon ornatus	Pistol shrimp	Pearse (1950)
Dromidia antillensis	Sponge crab	Voss & Voss (1960)
Galeppa flammera	Crab	Newell et al (1959)
Gnathophyllum americanus	Decapod	Pearse (1950)
Gonodactylus oerstedii	Stomatapod	Pearse (1950)
Grpsus grapsus	Sally-light-foot	Voss & Voss (1960)
Heteractae ceratopus	Decapod	Pearse (1950)
Heteromysis sp.	Mysid	Clarke (1955)
Horisella trisaetosa	Copepod	Chappuis & Delamare-Deboutteville (1956)
Laphontia arenicola	Copepod	Chappuis & Deboutteville (1956)
Laphontia Renaudi	Copepod	Chappuis & Deboutteville (1956)
Leucothoe commensalis	Stomatapod	Pearse (1950)
Lithotrya dorsalis	Boring barnacle	Voss & Voss (1960)
Macrocelona trispinosum	Crab	Pearse (1950)
Microcerbus Renaudii	Isopod	Chappuis & Deboutteville (1956)
Microphyne bicornuties	Crab	Voss & Voss (1960)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	ARTHROPODA (Continued)	
Microcerbus mirabilis	Isopod	Chappuis & Delamare-Deboutteville (1956)
Microcerbus littoralis	Isopod	Chappuis & Delamare-Deboutteville (1956)
Modulus sp.	Hermit crab	Voss & Voss (1960)
Murex sp.	Hermit crab	Voss & Voss (1960)
Pachygrapsus traversus	Piling crab	Voss & Voss (1960)
Panopeus herbstii	Crab	Pearse (1950)
Panopeus occidentalis	Brachyuran crab	Voss & Voss (1960)
Panulinus argus	W. Indian crawfish	Newell *et al* (1959)
Periclimenes americanus	Shrimp	Pearse (1950)
Periclimenes sp.	Shrimp	Pearse (1950)
Porcellina sayna	Crab	Pearse (1950)
Processa sp.	Crab	Pearse (1950)
Synalpheus brevicarpus	Alpheid shrimp	Pearse (1950)
Synalpheus brookski	Alpheid shrimp	Pearse (1950)
Synalpheus longicarpus	Alpheid shrimp	Pearse (1950)
Synalpheus minus	Alpheid shrimp	Pearse (1950)
Synalpheus pectinger	Alpheid shrimp	Pearse (1950)
Synalpheus rathbunai	Alpheid shrimp	Pearse (1950)
Tetraclita squamosa stalactifera	Barnacle	Voss & Voss (1960)
Tetraclita sp.	Ribbed barnacle	Voss & Voss (1960)
Tipton tortugae	Crab	Pearse (1950)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	FISH - SHARKS and RAYS	
Actobatis narinari	Spotted eagle ray	Bigelow and Schroeder (1948)
Alopias vulpinus	Thresher shark	Bigelow and Schroeder (1948)
Carcharhinus lionbatus	Ground shark	Bigelow and Schroeder (1948)
Carcharhinus longimanus	White tip shark	Bigelow and Schroeder (1948)
Carcharodon charcharias	Great white shark	Bigelow and Schroeder (1948)
Galeocerdo cuvier	Tiger shark	Bigelow and Schroeder (1948)
Ginglymostoma cirratum	Nurse shark	Bigelow and Schroeder (1948)
Hexancheum griseus	Mud shark	Bigelow and Schroeder (1948)
Isurus oxyrinchus	Mackerel shark	Bigelow and Schroeder (1948)
Manta sp.	Devil fish	La Garce (1919)
Mustelus canis	Smooth dogfish	Bigelow and Schroeder (1948)
Negaprion brevirostrias	Lemon shark	Bigelow and Schroeder (1948)
Paramaturus xaniurus	Filetail shark	Bigelow and Schroeder (1948)
Prionace glauca	Blue shark	Bigelow and Schroeder (1948)
Rhincodon typus	Whale shark	Gundger (1939)
Scyliorhinus carriculus	Cat shark	Gundger (1939)
Sphyrna zygaena	Hammerhead shark	Gundger (1939)
Squalus acanthias	Spiny dogfish	Gundger (1939)
	FISH - BONY FISH	
Abudeduf saxatilis	Seargent major	Woods (1952)
Acanthurus bahianus	Ocean surgeon	Fish (1954)
Acanthurus chirurgus	Doctor fish	Fish (1954)
Acanthurus coeruleus	Blue tang	Moulton (1958)
Albula vulpes	Bone fish	Fish (1954)
Anisotremus virginicus	Pork fish	Fish (1954)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	FISH - BONY FISH (Continued)	
Bagre marinus	Gaftopsail catfish	Fish (1954)
Balistes vetula	Queen triggerfish	Moulton (1958)
Calamus calamus	Saucerey porgy	Fish (1954)
Calamus providens	Porgy	Moulton (1958)
Canthidermis sabaco	Ocean triggerfish	Moulton (1958)
Caranx hippos	Horse-eye jack	Moulton (1958)
Chaetodipterus faber	Spade fish	Fish (1952)
Chilomycterus atinga	Spotted burrfish	Fish (1954)
Coryphaena sp.	Dolphin fish	Fish (1954)
Cypsalurus sp.	Flying fish	Mowbray (1956)
Diodon holacanthus	Ballon fish	Fish (1954)
Diodon hystrix	Porcupine fish	Moulton (1958)
Diplectrum formosum	Sand perch	Fish 1954)
Epinephelus adscensionis	Rock hind	Moulton (1958)
Epinephelus striatus	Nassau grouper	Moulton (1958)
Eupomacentrus laucosticus	Bean-gregory	Fish (1954)
Euthynnus pelamis	Skipjack tuna	Mowbray (1956)
Galeichthys felis	Sea catfish	Mowbray (1956)
Gymnothorax funebris	Green moray	Mowbray (1956)
Haemulon album	Margate	Moulton (1958)
Haemulon carbonarium	Caesar grunt	Fish (1954)
Haemulon flavolineatum	French grunt	Moulton (1958)
Haemulon macrostomum	Spanish grunt	Fish (1954)
Haemulon melanurum	Cotton wick	Fish (1954)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	FISH - BONY FISH (Continued)	
Haemulon parrai	Sailor's choice	Fish (1954)
Haemulon plumieri	White grunt	Fish (1954)
Haemulon sciurus	Yellow grunt	Moulton (1958)
Halichoeres bivittatus	Slippery dick	Fish (1954)
Halichoeres radiatus	Pudding wife	Fish (1954)
Holocentrus ascensionis	Squirrel fish	Moulton (1958)
Kyphosus sectatrix	Bermuda chub	Fish (1954)
Lachnolaimus maxicmus	Hog fish	Fish (1954)
Lactophyrs bicaudalis	Spotted trunkfish	Fish (1954)
Lactophyrs tricornis	Cowfish	Moulton (1958)
Lutianus apodus	Schoolmaster	Fish (1954)
Lutianus griseus	Gray snapper	Moulton (1958)
Lutianus synagris	Lane snapper	Fish (1954)
Melacanthus plumeri	- - - - - - -	Moulton (1958)
Megalops atlantica	Tarpon	Mowbray (1956)
Mycteroperca bonaci	Black grouper	Fish (1954)
Myceteroperca veneosa	Yellowfin grouper	Mowbray (1956)
Myporhamplrus	Flying fish	Mowbray (1956)
Naucrates ductor	Pilotfish	Mowbray (1956)
Ocyurus chrysurus	Yellowtail snapper	Mowbray (1956)
Oligoplites saurus	Leatherjacket	Mowbray (1956)
Opsanus beta	Oyster toadfish	Tavolga (1958)
Opsanus tau	Gulf toadfish	Tavolga (1958)
Pomacentrus leucostriatus	Demoiselle	Moulton (1958)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	FISH - BONY FISH (Continued)	
Pomicrops itaira	- - - - - -	Moulton (1958)
Pomocanthus arcuatus	Black angelfish	Moulton (1958)
Pomocanthus paru	French angelfish	Moulton (1958)
Scarus coeruleus	Blue parrotfish	Fish (1954)
Scarus guacamia	Rainbow parrotfish	Fish (1954)
Comber comberus	Atlantic mackeel	Mowbray (1956)
Scorpaena sp.	Scorpean fish	Moulton (1958)
Seriola dumerili	Amberjack	Fish (1954)
Sphaeroides maculatus	Common puffer	Moulton (1958)
Sphaeroides spengleri	Checkered puffer	Moulton (1958)
Sphyraena barracuda	Barracuda	Mowbray (1956)
Strongylura raphidoma	Houndfish	Mowbray (1956)
Strongylura sp.	Needlefish	Mowbray (1956)
Thunnus thynnus	Bluefin tuna	Krumholz (1959)
	REPTILES	
Caretta caretta	Loggerhead turtle	Ingle & Smith (1949)
Chelonia mydas	Green turtle	Ingle & Smith (1949)
Dermochelys coriacea	Leatherback turtle	Ingle & Smith (1949)
Thallasochelys imbricata	Hanksbill turtle	Ingle & Smith (1949)
Thallasochelys kempi	Kemp's turtle	Hanlon (1957-1961)
	MAMMALS	
Balaenoptera physalus	Finback whale	Kellogg (1929)

APPENDIX 2 (Continued)

Scientific Name	Common Name	Reference Source
	MAMMALS (Continued)	
Megaptera nodosa	Humpback whale	Kellogg (1929)
Mesoplodon densirostris	Beaked whale	Moore (1958)
Orcinus orca	Killer whale	Caldwell et al (1956)
Pseudorca crassidens	False Killer whale	Bullis & Moore (1956)
Sibbaldus musculus	Blue Whale	Kellogg (1929)